GOVERNMENT OF PUERTO RICO

DEPARTMENT OF NATURAL AND ENVIRONMENTAL RESOURCES

September 3, 2019

Ref. No 104-19

Via email to: john.colbert@gza.com

John A. Colbert
Associate Principal
249 Vanderbilt Avenue
Norwood, MA 02062

Re: Request for Concurrence
Supplemental Enhanced Reductive Dechlorination (ERD) Pilot Test
HP Inc. Voluntary Remediation Project
Road PR-362, Km 0.1
San Germán, Puerto Rico

Dear mister Colbert:

The Hazardous Waste Permits Division has received a letter dated August 8, 2019, in which GZA GeoEnvironmental, Inc. (hereafter, GZA), on behalf of HP Inc., requests a concurrence letter from the former Puerto Rico Environmental Quality Board (PREQB), now merged with the Department of Natural and Environmental Resources (DNER), for the installation of an additional injection well in the site in reference. The purpose of the installation of the additional injection well is to expand the Enhanced Reductive Dechlorination (ERD) pilot test initiated in March 2016, which was contemplated in the Revised Intrinsic Biodegradation Work Plan[1] (IBWP) -Revision 1, dated Otober 2015.

GZA has proposed the installation of an injection well IW-4 approximately 10 feet upgradient of monitoring well WB-4L and approximately 30 feet deep that will be screened in the shallow saprolite. The well installation would be concurrent with the fall 2019 or the spring 2020 semi-annual sampling event.

After the corresponding review, the DNER conditionally concurs with such proposal. A reduction in trichloroethylene (TCE) concentration at monitoring well OW-101 (near injection well IW-1) was observed, but well OW-307 (near injection wells IW-2 and 3) observed an increase in TCE concentration, if October 2018 analytical results are compared with April 2018[2] sampling event. Although not mentioned or suggested by GZA, the DNER also recommends the installation of an additional injection well in the northwest corner of the parking lot near wells WB-1L and WB-1U in the boundary with the Puerto Rico Energy Power Authority (PREPA) workshop since these wells showed high TCE concentrations of 110 and 27 microgram per liter (µg/L) in the saprolite and fill/alluvial unit, respectively,

[1] On May 14, 2010, GZA on behalf of the HP Inc., submitted a Intrinsic Biodegradation Work Plan (IBWP). Such work plan was then revised on October 2015 as per PREQB request. The Revised IBWP-Revision 1 (2015) included the installation of additional on- and off-Site wells for evaluating intrinsic biodegradation and an Enhanced Reductive Dechlorination (ERD) pilot test.

[2] The Semi-Annual Project Progress Report (January 2019, Q1-June 2019, Q2), dated August 8, 2019 has not been reviewed by the DNER yet.

according to the October 2018 sampling event analytical results presented in the Semi-Annual Project Progress Report (July 2018, Q3-December 2018, Q4), dated February 12, 2009.

Furthermore, the DNER considers that the groundwater contamination plume is not stable and continues advancing offsite the facility perimeter with concentrations exceeding the Puerto Rico Water Quality Standard (WQS) of 5 µg/L, specifically in wells GZ-702R and GZ-601R (i.e., 7.8 and 83 µg/L respectively). A clear groundwater-contaminated plume showing the contamination extent in monitoring wells is not demonstrated. Thus, DNER requires that additional monitoring wells be installed offsite the facility since the distribution and extent of groundwater contamination plume is not fully delineated. The contamination plume seems to have changed or has advanced to the southwest and northwest.

The TCE (and daughter products) concentrations offsite at the northwest and southwest are unknown. There is uncertainty of the contamination distribution and extent, especially in the vicinity of PREPA property (commercial office) to the west; to the northwest near the Puerto Rico Aqueduct and Sewer Authority wastewater treatment plant (PRASA WWTP) across the road PR-360 to the west of the cemetery entrance; and, the road PR-362 in the vicinity of the El Convento community to the southwest. According to the Contingency Plan contained in the IBWP (2010), "if groundwater countouring indicates that flow patterns are significantly different than anticipated, additional monitoring wells may be installed downgradient of Site in the direction of groundwater flow". Thus, DNER has determined that additional monitoring wells must be installed to fill data gaps. DNER requires HP Inc. to install and develop three monitoring wells as follows: one near the intersection roads PR-360 and PR-362 (preferably in road PR-360, to the south of where well GS-702R is installed), another southwest cross the road PR-362 close to the community sidewalk, and another to the northwest of PRASA WWTP (near the WWTP entrance at road PR-360 to the west of cemetery).

In summary, the DNER recommends HP Inc. to consider not only one additional injection well to the west of the Site as proposed, but to consider the installation of another injection well to the northwest (near monitoring wells WB-1L and GZ-501L) where are high TCE concentrations, and the installation of the three monitoring wells, as indicated above. It should be noted that the installation of these new wells will require modification to the monitoring program. Thus, the work plans previously approved (Intrinsic Bioremediation Study Work Plan-2010, the 2015 IBWP-Revision 1, and Quality Assurance Project Plan) will need appropriate revisions to incorporate the works mentioned above prior the wells have been installed and developed.

Regarding the proposed changes to the sampling frequency of the monitoring wells (Table 6) requested in the Semi-Annual Project Progress Report (Q3-Q4 2018), dated February 12, 2019, the DNER denies the proposed sampling frequency. Because of the modifications being proposed to the ERD Pilot Test discussed above, the DNER requires semi-annual monitoring for <u>all</u> wells beginning in October 2019 for at least 8 rounds, including the new injection and monitoring wells to be installed.

Ultimately, after the evaluation of the Site conditions, if these additional injections and subsequent sampling do not support intrinsic biodegradation activity and control the migration of the plume, HP, Inc. should consider other remedy alternatives for the Site.

This letter should serve GZA for the purpose of obtaining the applicable DNER's permits for the wells construction and the Underground Injection Control permit.

Should you have any questions, please do not hesite to contact Eng. Josephine C. Acevedo Esquilín, Project Manager of the HWPD at phone number 787-767-8181, extensions 3459.

Cordially,

María A. Coronado Baca, PG
Acting Manager
Land Pollution Control Area

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